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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,309	07/02/2003	Robert A. Ulichney	200309202-1	4090
7590	09/10/2004		EXAMINER	
HEWLETT-PACKARD COMPANY			CRUZ, MAGDA	
Intellectual Property Administration				
P.O. Box 272400			ART UNIT	PAPER NUMBER
Fort Collins, CO 80527-2400			2851	

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/612,309	ULICHNEY ET AL.
	Examiner	Art Unit
	Magda Cruz	2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 02 July 2003.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-8 and 12-14 is/are rejected.  
 7) Claim(s) 9-11 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 29 December 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Specification***

1. The abstract of the disclosure is objected to because it exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 8 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ulichney.

Ulichney (US 2001/0045957 A1) discloses a system (10) for modifying input image data used by a projector in generating a displayed image (page 2, paragraph 0025, lines 1-4), the projector (i.e. video system) supporting number of unique levels (page 2, paragraph 0026, lines 1-4), the system (10) comprising a luminance uniformity engine (16) configured to process the input image data so as to generate corrected image data that is uniform in luminance (page 2, paragraph 0027, lines 4-9); a dither engine (12) configured to process the corrected image data from the luminance uniformity engine so as to generate dithered image data (page 2, paragraph 0027, lines 4-5); and a converter configured to convert the dithered image data into the unique

levels of the projector (page 2, paragraph 0028, lines 2-4); wherein the luminance uniformity engine comprises a front-end look-up table (20) that imposes a gain on the input level to produce a resulting input level (page 2, paragraph 0028, lines 1-2); a spatial attenuation array (26) configured with a plurality of distortion correction values (page 2, paragraph 0029, lines 1-6); and a multiplier circuit (24) for multiplying the resulting input level from the front-end LUT by a selected distortion correction value from the spatial attenuation array to produce a luminance corrected input level (page 4, paragraph 0064, lines 1-6). A method for correcting projector non-uniformity and increasing apparent amplitude resolution, the projector supporting a stated number of levels (page 1, paragraph 0011, lines 1-9), the method comprising the steps of measuring the projector non-uniformity at a plurality of the stated levels; determining the number of unique levels supported by the projector (page 2, paragraph 0012, lines 1-7); utilizing the non-uniformity measurements to generate uniform projector image data (page 2, paragraph 0012, lines 7-11); and dithering the modified projector image data such that a displayed image appears to have been formed either from the stated number of levels or from a greater number of levels than the stated number (page 2, paragraph 0028, lines 7-11); wherein the uniform projector image data has a plurality of corrected levels, and the step of dithering the uniform projector image data comprises the step of utilizing a selected dither template pattern to convert the corrected levels of the uniform image data to corresponding dither output levels (page 3, paragraph 0037, lines 1-11); further comprising the step of mapping each dither output level to a respective unique output level supported by the projector (page 2, paragraph 0012,

lines 7-11); wherein the selected dither template pattern is a void and cluster pattern (page 3, paragraph 0034, lines 5-6).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ulichney in view of Cheung et al.

Ulichney (US 2001/0045957 A1) teaches the salient features of the present invention, except the input image data including a level and x, y coordinates for each level, and the distortion correction values of the spatial attenuation array are indexed by the x, y coordinates of the input image data; an adder circuit configured to generate a sum by adding a selected dither value to the luminance corrected input level; and a shift register configured to shift the sum by a selected number of bits, thereby producing a dithered output level. However, Ulichney teaches comparing the adjusted dither template values against the input image pixels to determine which input image pixels are to be displayed on the output device (page 1, paragraph 0011, lines 7-9).

Cheung et al. (US Patent Number 6,185,334 B1) discloses an input image data including a level and x, y coordinates for each level (column 4, line 9), and the distortion

correction values of the spatial attenuation array are indexed by the x, y coordinates of the input image data (column 4, line 10); an adder circuit configured to generate a sum by adding a selected dither value to the luminance corrected input level (column 12, lines 52-58); and a shift register configured to shift the sum by a selected number of bits, thereby producing a dithered output level (column 12, lines 46-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize the calculations disclosed by Cheung et al. in combination with Ulichney's invention, for the purpose of detecting a dithered image based on a predetermined data (column 2, lines 54-56).

#### ***Allowable Subject Matter***

6. Claims 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

The step of determining the number of unique projector levels comprises the steps of generating a displayed image from the projector for each of the plurality of stated projector levels; capturing each of the displayed images with a camera, each camera captured image having a plurality of pixel values; averaging all of the pixel values for each camera captured image; and comparing the averaged pixel values computed for two adjacent stated projector levels to determine whether the two stated

projector levels are unique (as recited in claim 9), in combination as claimed cannot be made inherent or obvious by the prior art of record.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Choi et al. (US Patent Number 5,495,346) discloses an element generator for dither matrix and a dithering apparatus using the same.

Ulichney (US Patent Number 5,535,020) teaches a void and cluster apparatus and method for generating dither templates.

Cannon et al. (US Patent Number 5,980,044) shows an area of interest display system with image combining using error dithering.

Cheung et al. (US Patent Number 6,22,945 B1) discloses a selective filtering of dithered image for the purpose of inverse dithering.

Ulichney (US Patent Number 6,330,368 B1) teaches a method for generating dither values for one-dimensional dither arrays.

Cheung et al. (US Patent Number 6,347,160 B1) shows increasing the bit of and filtering dithered images for the purpose of inverse dithering.

Cheung et al. (US Patent Number 6,473,525 B1) discloses a method for detecting an image edge within a dithered image.

Ulichney (US Patent Number 6,690,389 B2) teaches a tone modifying dithering system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magda Cruz whose telephone number is (571) 272-2114. The examiner can normally be reached on Monday through Thursday 8:00-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JUDY NGUYEN  
PRIMARY EXAMINER

Magda Cruz  
Patent Examiner  
September 2, 2004